# U.S. Department of Energy

# OPERATING PLAN

**National Energy Technology Laboratory**

O 430.2-1

**DATE:** 3/14/03



**SUBJECT:** ENERGY MANAGEMENT PLAN

1. PURPOSE. The purpose of this Plan is to establish and implement programs that meets applicable laws, Executive Orders, and Federal regulations for energy efficiency, DOE Order 430.2, and promotes the use of renewable energy and water conservation.

2. CANCELLATION. All prior NETL documents pertaining to Energy Management.

3. REQUIREMENTS.

   a. NETL shall establish and maintain an Energy Management Plan (attached).

   b. The Energy Management Plan (EMP) shall apply to all NETL (Federal and contractor) activities and installations including research and development, grounds and buildings functions, and transportation systems.

   c. The EMP shall provide objectives, measures, and expectations to cost effectively meet or exceed energy and water use goals and objectives set by Public Laws, Executive Orders, and the Department of Energy (DOE).

   d. All site personnel (Federal and contractor) shall be responsible for energy management activities.

   e. The Energy Management Plan shall be reviewed annually and updated as needed to reflect negotiated performance agreements with DOE Headquarters.

4. DEFINITIONS. Any definitions needed for this Plan may be found in the reference documents.

5. REFERENCES.

   a. DOE Order 430.2, Departmental Energy and Utilities Management, and any future revisions.

   b. Energy Policy Act of 1992, Subtitle F, Section 152, Federal Energy Requirements Amendment.

**INITIATED BY:** Office of Business and Logistics
**NO. OF PAGES/ATTACHMENTS:** 2 pages, 1 attachment

c. Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities, March 8, 1994 (d) Public Law 102-486 adds water conservation to the energy program.

d. Executive Order 13123, Greening of the Government Through Efficient Energy Management.

e. Executive Order 13221, Energy Efficient Standby Power Devices.

f. 10 CFR 436, Federal Energy Management and Planning Programs.

6. RESPONSIBILITIES.

a. NETL Energy Manager shall ensure that the Plan is maintained, reviewed annually, and updated as needed.

b. NETL Managers/Supervisors shall ensure that the Plan is being applied to all NETL (Federal and contractor) activities and installations.

c. NETL Employees shall apply the Plan to all NETL (Federal and contractor) activities and installations.

7. ATTACHMENTS.

a. Attachment 1 -- Energy Management Plan.

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Associate Director, OBL

ATTACHMENT 1




# ENERGY MANAGEMENT PLAN

## September 2002

**Executive Summary**

DOE Order 430.2 establishes the requirements and responsibilities for managing the Department of Energy (DOE) energy and utility supplies and services. In addition to setting energy efficiency and leadership goals, the Order requires DOE sites to have an Energy Management Program and develop an Energy Management Plan to achieve, to the maximum extent possible, the leadership goals outlined in detail in the Order.

This Energy Management Plan demonstrates National Energy Technology Laboratory's (NETL's) commitment for an Energy Management Program and the development of a Plan with specific performance measures for achieving the objectives of the DOE Order.

The energy performance measures in the Plan are not limited to Site Operation Division, but will require the cooperation of NETL as a whole.

During FY 2002, NETL negotiated the second Energy Management Performance-Based Objectives, Measures, and Expectations with DOE Federal Energy Management Program (FEMP). The new performance objectives are included in NETL's Energy Management Plan. This Performance-Based Plan and NETL's Energy Management Plan will be based on meeting the requirements of the current DOE Order 430.2. It will also serve as the working document for the anticipated future negotiations for the Performance-Based Plan.

1. **Applicability**

This Plan applies to all National Energy Technology Laboratory (NETL) activities and installations in regards to implementing programs to meet energy and water use goals and objectives set by Public Laws, Executive Orders, and the Department of Energy (DOE).

2. **References**

a. DOE Order 430.2, Departmental Energy and Utility Management, and additional references contained therein.

b. Energy Policy Act of 1992, Subtitle F. Section 152 Federal Energy Requirements Amendment.

c. Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities, March 8, 1994.

d. Executive Order 13123, Greening of the Government Through Efficient Energy Management.

e. Executive Order 13221, Energy Efficient Standby Power Devices.

f. 10 CFR 436, Federal Energy Management and Planning Programs.

3. **Energy Plan Scope**

The energy management strategy developed by NETL includes all on-site Federal and contractor operations including research and development, grounds and buildings functions, and transportation systems.

4. **Energy Awareness Program**

The Energy Awareness Program goal is to encourage all personnel to use energy efficiently, both at work and at home, and to recognize the rewards of energy and water conservation. The program reflects a long-term commitment by DOE to expose individuals to the energy issues, educate staff about the direct relationship between energy and national security, and maintain interest in conserving energy and water by tracking and publicizing goals and achievements.

5. **Emergency Conservation Plan**

An emergency conservation plan shall be established for assuaging the impact of a sudden disruption in supply of oil-based fuels, natural gas, or electricity.

a. Note 1: Normal operating hours for the lighting in the main office buildings start at 6:00 a.m. At 8:00 p.m.1/3 of the lights are shut off. At 12:45 a.m. all the lights are shut off (except for minimum lighting for Security to be able to patrol the hallways).

b. Note 2: Normal operating hours on the HVAC systems are from 4:00 a.m. to midnight.

c. Note 3: At all levels, large-scale projects will be staggered in their operation. They will be classified into different groups, and allowed to run 1 week at a time, thus keeping peak AND total loads to a minimum level.

d. Note 4: The three plans listed below are feasible for NETL to operate for a period of up to 12 months as specified in 10 CFR 436.105.

e. Note 5: It is not expected that there will be any need to substitute any fuels from one system to another.

10% Energy Reduction Level

a. Preferred parking shall be given to individuals with at least 2 employees carpooling in their vehicle.

b. Lighting in the main office buildings will be reduced by 1/3 (i.e., one bulb in each of the three bulb fixtures will be deactivated).

c. HVAC system will shut down at 10:00 p.m.

15% Energy Reduction Level

a. Preferred parking shall be given to individuals with at least 2 employees carpooling in their vehicle.

b. Lighting in the main office buildings will be reduced by 1/3 (i.e., one bulb in each of the three bulb fixtures will be deactivated).

c. HVAC system will shut down at 8:00 p.m.

d. All portable space heaters in the main office buildings will be removed.

20% Energy Reduction Level

a. Preferred parking shall be given to individuals with at least 2 employees carpooling in their vehicle.

b. Lighting in the main office buildings will be reduced by 1/3 (i.e., one bulb in each of the three bulb fixtures will be deactivated).

c. HVAC system will shut down at 6:00 p.m.

d. All portable space heaters in the main office buildings will be removed.

e. Emergency only use of private vehicles to travel between the sites, Government shuttles will still operate normally.

f. Thermostats will be set into the lower acceptable range for winter months and into the higher acceptable range for the summer months. These temperatures will correlate directly with the Building Air Quality Managers Manual.

6. **Organization**

The NETL Energy Manager duty revolves around the coordinated effort of NETL meeting its Energy Management objectives. These Energy Management objectives will change from time to time to reflect the objectives negotiated with DOE Headquarters. All employees have the responsibility for energy management activities.

7. **Energy Management Objectives**

Energy management performance-based objectives, measures, and expectations for NETL are negotiated with DOE FEMP every 2 years. The objectives negotiated with DOE FEMP are provided in Appendix A. These objectives have been signed by the Assistant Secretary for Energy Efficiency and Renewable Energy (ASEE), the Assistant Secretary for Fossil Energy (ASFE), and the NETL Director. Appendix B contains the milestones for implementing the Energy and Utilities Management Self-Assessment Program with DOE.

8. **Energy Management Self Assessment**

Self assessment is an ongoing process whereby NETL monitors performance throughout the year and evaluates its ability to control and improve its management processes for the implementation of DOE Order 430.2. The culmination of this effort results in a Self-Assessment Report (SAR). The report is used by the Office of Energy Efficiency and Renewable Energy (EE) and Fossil Energy (FE) and NETL to evaluate performance against predetermined objectives, measures, and expectations. Specifically evaluated are functions performed by NETL, including their system for overseeing their contractors.

It is agreed that NETL may need timely assistance from EE in resolving policy or legal issues at Headquarters or coordinating with other DOE Programs to accomplish these performance objectives. It is also agreed that the accomplishment of these objectives may be subject to the availability of funds. These factors may appropriately delay accomplishment of the objectives and would be addressed in the SAR. The self-assessment process includes:

- The development of mutually agreed upon performance objectives, measures, and expectations.
- A mutually agreed-upon schedule.
- Reasonable assurance that appropriate internal controls, e.g., Federal Managers Financial

Integrity Act requirements, are in place and that compliance requirements are being met.

- Continual analysis of performance against agreed-upon performance objectives, measures, and expectations.

- Optional methods for demonstrating performance such as 360-degree surveys of customers, managers and process users, benchmark comparisons, and data trending.

- A formal SAR, which is evaluated by DOE HQ (EE and FE).

8.1 **Submission Requirements**

The SAR to be submitted to EE and FE will include a memorandum signed by the Director of NETL or authorized representative, transmitting the SAR, and supporting documentation.

## 9. Self-Assessment Report Format

The following is a recommended format for preparing the SAR. It includes guidance on information to be included in each section of the report. The format is not intended to be prescriptive relative to length or depth. However, the report should provide details relative to the (1) negotiated performance objectives, measures, and expectations and (2) demonstrate compliance requirements.

Outlined below are the key components of the SAR:

9.1 **Management Overview**

Summarizes the NETL key accomplishments, areas of excellence, and improvement opportunities in DOE Order 430.2 implementation.

9.2 **Detailed Assessment**

Provides assessment of NETL performance against each of the individual measures and expectations negotiated for DOE Order 430.2 implementation. For each measure provide:

- Performance Objective, Measure, and Expectations
- Performance Results
- Supporting Documentation
- Self-Assessment Methodology
- Areas of Excellence
- Improvement Actions
- Barriers to Improvement

10. **Headquarters Self-Assessment Review and Criteria**

Both EE and FE may conduct a review at NETL sites concerning the information in the Self-Assessment Report. Criteria for conducting a review are (1) risk associated with indicators of weakness in functional areas evident in self-assessments or other reviews; (2) the time period since the last review exceeds the maximum review cycle period required by law or regulation or 4 years after enactment of this Energy Management Performance Agreement - to be done in a consolidated manner if appropriate (i.e., with Business Management Oversight Pilot or other Headquarters reviews); and (3) "for cause" reviews which will be conducted when NETL cannot demonstrate adequate control of processes or when performance results do not meet expectations.

11. **Schedule**

The Self-Assessment Report is due annually at the date negotiated with EE.

**PERFORMANCE AGREEMENT FOR ENERGY AND UTILITIES MANAGEMENT BETWEEN DEPARTMENT OF ENERGY (DOE) HEADQUARTERS (HQ), ASSISTANT SECRETARY FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY, ASSISTANT SECRETARY FOR FOSSIL ENERGY, AND DOE NATIONAL ENERGY TECHNOLOGY LABORATORY (NETL)**



Department of Energy Order 430.2, DEPARTMENTAL ENERGY AND UTILITIES MANAGEMENT (DOE O 430.2A), of April 15, 2002, establishes requirements to cost effectively meet or exceed all laws, Executive Orders, and Federal regulations for energy efficiency, use of renewable energy, and water conservation at Federal facilities. Executive Order 13123, Greening the Government Through Efficient Energy Management, of June 3, 1999, and goals in Secretary of Energy Richardson's memorandum of November 12, 1999, *Pollution Prevention and Energy Efficiency Leadership Goals for Fiscal Year 2000 and Beyond* provide additional requirements. DOE Order 430.1A, LIFE CYCLE ASSET MANAGEMENT of October 14, 1998, establishes requirements for the efficient and effective acquisition, management, and use of utilities.

This Performance Agreement has been developed using a consensus approach by the representatives of the above offices. It will consist of two self-assessment periods ending in FY 2003. Attachment 1 and Appendices A and B include the agreed-upon terms and conditions of this Performance Agreement. Attachment 1 contains (1) self-assessment process, (2) self-assessment report format, and (3) review criteria. Appendix A contains the performance-based objectives, measures, and expectations. Appendix B contains milestones.

Director, National Energy Technology Laboratory

Assistant Secretary, Energy Efficiency and Renewable Energy

Assistant Secretary, Fossil Energy

**APPENDIX A**

**Energy Management Performance-Based Objectives, Measures, and Expectations**

**Based on DOE Order 430.2 4/15/2002**



Vision

To cost effectively meet or exceed all applicable laws, Executive Orders, and Federal regulations for energy efficiency, use of renewable energy, and water conservation at Federal facilities.

| |
|---|
| OBJECTIVE 1<br><br>Energy management initiatives are managed consistent with a Comprehensive Energy Management Plan that includes the minimum requirements of the updated DOE Order 430.2X, an energy curtailment plan and the requirements of Executive Order 13123. |
| MEASURE<br><br>Comprehensive Energy Management Plan has been updated to include minimum requirements of the updated DOE O 430.2X, an energy curtailment plan and the requirements of Executive Order 13123. |
| FY 2001 EXPECTATIONS<br><br>Comprehensive Energy Management Plan updated by **September 30, 2002**.<br><br>Gradient:<br>Far Exceeds Expectations: Updated by 3/31/02<br>Exceeds Expectations: Updated by 5/15/02<br>Meets Expectations: Updated by 6/30/02<br>Needs Improvement: Updated after 9/30/02 |
| Note: DOE O 430.2X is currently in draft, and will be finalized by late FY 2001. |

OBJECTIVE 1.1

Energy management initiatives are managed consistent with a Comprehensive Energy Management Plan that includes the minimum requirements of the updated DOE O 430.2X, an energy curtailment plan and the requirements of Executive Order 13123.

MEASURE

Energy requirements accomplished/requirements scheduled to be accomplished during the Fiscal Year in accordance with the Comprehensive Energy Management Plan.

| FY 2002 EXPECTATIONS | FY 2003 EXPECTATIONS |
|---|---|
| Energy requirements accomplished/requirements scheduled > 0.75. | Energy requirements accomplished/ requirements scheduled > 0.75. |
| Gradient: | Gradient: |
| Far Exceeds Expectations: > 0.95 | Far Exceeds Expectations: > 0.95 |
| Exceeds Expectations: > 0.85 | Exceeds Expectations: > 0.85 |
| Meets Expectations: > 0.75 | Meets Expectations: > 0.75 |
| Needs Improvement: < 0.75 | Needs Improvement: < 0.75 |

OBJECTIVE 2

NETL begins reporting its energy consumption under the Laboratory and Industrial Category and its energy use reductions show continuous improvement and are on target to meet the FY 2005 requirement of a 20 percent reduction in energy use per square foot in laboratory and industrial facilities using a 1990 baseline.

MEASURE

$[(CY - PY) \times N]/(0.30 - PY) \geq 1$

N = Number of years remaining until FY 2005
0.30 = FY 2005 buildings energy reduction requirement

Example:
PY (FY 1998) = 0.12 (12% reduction from FY 1990)
CY (FY 1999) = 0.15 (15% reduction from FY 1990)
N = (2005 - 1998) = 7
(0.15 - 0.12) x 7/0.18 = 1.16

| FY 2002 EXPECTATIONS | FY 2003 EXPECTATIONS |
|---|---|
| Energy data from either the Buildings Category or the Metered Process Category (or both) are transferred to the Laboratory and Industrial Facilities Category and,<br><br>Using a straight line from PY, CY on target to meet FY 2005 requirement.<br><br>Gradient:<br>Far Exceeds Expectations: - 1.3<br>Exceeds Expectations: - 1.2<br>Meets Expectations: - 1.0<br>Needs Improvement: < 1.0 | Using a straight line from PY, CY on target to meet FY 2005 requirement.<br><br>Gradient:<br>Far Exceeds Expectations: - 1.3<br>Exceeds Expectations: - 1.2<br>Meets Expectations: - 1.0<br>Needs Improvement: < 1.0 |

Note: The transfer of energy data should be completed in early FY 2002, and will include all previous years.

OBJECTIVE 3

Develop and implement water efficiency program and plans.

MEASURE 3

Establish a Water Efficiency Program and Plan to implementation at least four of the best management practices published by FEMP to facility planning processes and operations.

| FY 2002 EXPECTATIONS | FY 2003 EXPECTATIONS |
|---|---|
| Provide FY 2001 baseline potable water use for each site in FY 2001 Annual Report to President/ Congress on Energy Management; and demonstrate implementation of the following number of Best Management Practices:<br><br>Far Exceeds Expectations: > 8<br>Exceeds Expectations: > 6<br>Meets Expectations: > 4<br>Needs Improvement: < 4 | Review and accomplish life cycle cost effective water efficiency retrofit/replacement options in 10 percent of facilities.<br><br>Far Exceeds Expectations: > 30 percent<br>Exceeds Expectations: > 20 percent<br>Meets Expectations: > 10 percent<br>Needs Improvement: < 10 percent |

Note:

OBJECTIVE 4

Evaluate and attempt to qualify office buildings for receipt of the Energy Star Building label by December 31, 2003.

MEASURE 4

Number of current office buildings or new office buildings that receive the Energy Star Building label.

| FY 2002 Expectation | FY 2003 Expectation |
|---|---|
| At least two office buildings are evaluated to determine what cost-effective modifications are required to achieve an Energy Star Building label. | At least one current office building or all newly constructed office buildings receive the Energy Star Building label. |
| Far Exceeds Expectation: > 4<br>Exceeds Expectation: > 3<br>Meets Expectation: > 2<br>Needs Improvement: < 1 | Far Exceeds Expectation: > 3<br>Exceeds Expectation: > 2<br>Meets Expectation: > 1<br>Needs Improvement: < 1 |

Note: If no current office buildings can be cost effectively modified to acquire an Energy Star Building label, or no new office buildings are built during this period, this objective will not apply.

OBJECTIVE 5

Increase the number of energy management retrofit projects that are funded and completed on site.

MEASURE 5

Number of energy management retrofit projects that are identified as cost effective and submitted for funding consideration under the call for projects by the Federal Energy Management Program, calls for general plant projects or line item construction projects or are pursued for funding under alternative financing mechanisms including Energy Savings Performance Contracting (ESPC) or Utility Energy Service Contracts.

| FY 2002 EXPECTATION | FY 2003 EXPECTATION |
|---|---|
| At least one new energy management retrofit project submitted for FEMP funding consideration (or funded by other means) by the second quarter of FY 2002.<br><br>Gradient:<br>Far Exceeds Expectations: - 3<br>Exceeds Expectations: - 2<br>Meets Expectations: - 1<br>Needs Improvement: - 0 | At least one new additional energy management project submitted for FEMP funding consideration (or funded by other means) by the second quarter of FY 2003.<br><br>Gradient:<br>Far Exceeds Expectations: - 3<br>Exceeds Expectations: - 2<br>Meets Expectations: - 1<br>Needs Improvement: - 0 |

Note: Total estimated cost of a project is expected to approach or be greater than $200 thousand.

OBJECTIVE 6

Increase use of off-grid generation.

MEASURE

Number of off-grid generation systems (solar hot water, solar electric, solar outdoor lighting, small wind turbines, fuel cells, and other off-grid alternatives) where such systems are life cycle cost effective and offer other benefits.

| FY 2002 Expectation | FY 2003 Expectation |
|---|---|
| Evaluate at least two applications for the use of off-grid generation including the use of a solar hot water heating system for the Child Development Center and submit at least one off-grid generation system to the Federal Energy Management Program (FEMP) for potential funding.<br><br>Gradient:<br>Far Exceeds Expectation: > 3<br>Exceeds Expectation: > 2<br>Meets Expectation: > 1<br>Needs Improvement: None | At least one additional off-grid generation system is submitted to FEMP for potential funding.<br><br>Gradient:<br>Far Exceeds Expectation: > 4<br>Exceeds Expectation: > 2<br>Meets Expectation: > 1<br>Needs Improvement: None |

Note: This objective will not be evaluated in FY 2003 if Aexceeds expectation@ is obtained in FY 2002.

OBJECTIVE 7

The National Energy Technology Laboratory will plan for and ensure the efficient and economical acquisition, management, and use of energy and utilities at their Laboratories.

MEASURE1

Plan for and then acquire utilities after developing utility options and preparing utility procurement plans using the LCAM graded approach. (Planning and Acquisition of Utilities - 6.h.)

MEASURE 2

Monitor utility rates, rules, regulations, and industry activities in a teaming effort with suppliers and Headquarters' for potential DOE effect. (Utility Rules, Regulations, and Industry Activities - LCAM 6.d(2).)

MEASURE 3

Seek opportunities for economical or improved utility service arrangements. (Economical Utility Services - LCAM 6.d.(2).)

| FY 2002 Expectation | FY 2003 Expectation |
|---|---|
| 1. After Headquarters' approval of the utility procurement plan, implement the selected option.<br><br>2. Demonstrate that monitoring processes are in place, which include informing FEMP.<br><br>3. Implement economical or improved arrangements based on reliability, flexibility, and economy. | Same. |

Note:

## APPENDIX B

### Energy and Utilities Management Milestones

| | |
|---|---|
| • Agreement on Self-Assessment Process | August 7, 2001 |
| • Agreement on Self-Assessment Metrics | August 23, 2001 |
| • EE Coordinate Review and Comments With Program Office | August 7, 2001 - August 15, 2001 |
| • Agreement on Final Metrics | September 23, 2001 |
| • FY 2001 Self-Assessment Period | October 1, 2001 - September 30, 2002 |
| • Self-Assessment Report to EE* | January 15, 2003 |
| • EE Coordinates with Program Office | January 15, 2003 - February 28, 2003 |
| • EE Consolidates Feedback to NETL | March 28, 2003 |
| • Negotiate FY 2004 Metrics | March 30, 2003 |
| • Second Self-Assessment Period | October 1, 2002 - September 30, 2003 |
| • Self-Assessment Report to EE* | January 15, 2004 |
| • EE Coordinates with Program Office | January 15, 2004 - February 28, 2004 |
| • EE Consolidates Feedback to AL | March 28, 2004 |

* Conference call to discuss FY 2002/2003 successes/failures, lessons learned, and agreement, where necessary.